

**Before the  
Federal Communications Commission  
Washington, DC 20554**

In the Matter of	)	
	)	
Modification of Parts 2 and 15 of the	)	ET Docket No. 03-201
Commission's Rules for unlicensed devices and	)	
Equipment approval	)	
	)	

**Reply Comments of Vivato, Inc.**

Vivato, a Wi-Fi infrastructure systems company, manufactures Wi-Fi switches designed to enable high bandwidth Wi-Fi wireless networks. Vivato provides products that increase the coverage area and reduce the cost of deploying Wi-Fi networks.

Vivato respectfully offers the following Reply Comments in this proceeding.

**Advanced Antenna Technologies**

In many Comments to this proceeding, suggestions have been made regarding the EIRP limits for systems employing advanced antenna technologies. Vivato believes that the public benefits when advanced antenna technologies are permitted to use the power levels allowed for point-to-point systems. A primary benefit of these technologies is to lower interference in unintended transmitting directions. Reduction in EIRP to levels below the levels allowed for point-to-point systems will slow or stop the introduction of these advanced technologies.

In rural areas, and in areas that experience high signal attenuation, there is substantial performance improvement, and reduction in deployed cost, when using a high gain antenna and appropriate transmit power. The appropriate transmit power is often determined to be approximately equal to the power applied to the antenna at the other end of the communication link. The point-to-point power rules allow appropriate power levels to be used in a variety of deployments.

A Comment has been offered suggesting that multi-beam advanced antenna systems should have beam widths less than 5 degrees, when the multiple beams transmit a total power using the +8 dB multi-beam allowance. A 5 degree beam width, over a 120 degree coverage area, is difficult to achieve using advanced antenna technologies. For example, many array elements are required to achieve narrow beam widths. Vivato believes that stringent beam width limits will slow the introduction of advanced antenna technologies. For example, at least one FCC-approved point-to-point multi-beam device has a beam width greater than the suggested 5 degree limit. Propagation characteristics may limit the usefulness of a very narrow beam width device. Perhaps the use of very narrow beam widths should be considered in future studies.

Vivato believes that point-to-point power levels should be permissible when using advanced antenna technologies in the 2.4 GHz band, and in

other unlicensed bands. The use of advanced antenna technologies in the 5 GHz bands, for example, will reduce interference by transmitting energy in intended directions, using a narrow beam width.

**Out-of-band emission limits**

Vivato believes that the current out-of-band emission limits are acceptable and that reductions in these limits will greatly raise the cost and slow the introduction of many unlicensed band products.

**Clarification of a Vivato Comment**

Vivato would like to clarify the following Vivato Comment submitted in this proceeding: "Narrow beam width receiving antennas reduce the susceptibility to interference, and will usually be used when narrow beam width transmitting antennas are part of the wireless system." "Receiving antennas", and "transmitting antennas", refer to the antennas used in a single approved unlicensed device, not to the antennas at each end of a wireless link.

Respectfully Submitted,

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February 7, 2004